

APPENDIX A

1. A semiconductor device including both a large-diameter contact hole and a small-diameter contact hole formed to penetrate through an insulator film formed on a conductive portion to reach said conductive portion, said small-diameter contact hole being completely filled with a plug of a refractory conductive material, and said large-diameter contact hole being partly filled by said refractory conductive material which covers a sidewall surface of said large-diameter contact hole to below the upper end of said large-diameter contact hole by a predetermined distance, said refractory conductive material being simultaneously deposited in said small diameter hole and said large diameter hole, a wiring conductor layer being deposited on said insulator film to cover a top surface of said plug of said refractory conductive material, and to fill at least in part space remaining in said large-diameter contact hole thereby to cover a bottom of said large-diameter contact hole and said refractory conductive material within said large-diameter contact hole.

2. A semiconductor device claimed in Claim 1 wherein each said large-diameter contact hole and each said small-diameter contact hole has a funnel-shaped portion formed on an upper portion thereof to open or spread upward, a surface of said funnel-shaped portion being covered with said wiring conductor layer.

3. A semiconductor device claimed in Claim 2 wherein said refractory conductive material is a material selected from the group consisting of a refractory metal and a silicide of a refractory metal.

4. A semiconductor device claimed in Claim 2 wherein said large-diameter contact hole has an aspect ratio of not greater than 2, and said small-diameter contact hole has an aspect ratio of greater than 2.

5. A semiconductor device claimed in Claim 4 wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

6. A semiconductor device claimed in Claim 2 wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

7. A semiconductor device claimed in Claim 1 wherein said refractory conductive material is a material selected from the group consisting of a refractory metal and a silicide of a refractory metal.

8. A semiconductor device claimed in Claim 7 wherein said large-diameter contact hole has an aspect ratio of not greater than 2, and said small-diameter contact hole has an aspect ratio of greater than 2.

9. A semiconductor device claimed in Claim 8 wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.

10. A semiconductor device claimed in Claim 7 wherein said predetermined distance is in the range of not less than 10% but not greater than 40% of a thickness of said insulator film.